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ORIGINAL PAPER

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Abstract A series of 417 consecutively admitted psychiatric inpatients were studied with regard to their use of potentially abusive psychotropic substances in the last 3 months preceding admission. In all patients face-to-face interviews were performed; in 354 of them urine specimens could also be tested. Alcohol and benzodiazepines belonged to the most frequently used substances followed by cannabis, opiates and cocaine. Barbiturates, hallucinogens and amphetamine derivatives were only exceptionally reported. The most important finding of the study is that every fifth patient regularly used “hard” drugs (opiates and/or cocaine), every fourth patient illegal drugs and every third patient alcohol. Substances were found in 54% of all urine specimens; methadone, opiates and cocaine were hardly found alone. For the latter substances excellent agreement was found between interview reports and urine exams. Excluding patients diagnosed as substance-use disorders, there were no statistically significant differences between schizophrenic, affective, neurotic/stress/somatoform and other disorders with regard to the use of “hard” drugs and illegal drugs. Regular substance use correlated with much worse psychosocial adjustment. Substance use has to be explored and considered in every individual psychiatric inpatient.

Key words Substance use · Psychiatric inpatients · Urine tests · Illegal drugs · “Hard” drugs · Diagnosis

Introduction

Higher prevalence rates of substance-use disorder have been found among psychiatric patients than in the general population (Group for the Advancement of Psychiatry

1991) or in other comparison groups; e.g. in a series of 300 psychiatric patients 62% of men and 48% of women qualified as heavy users of some substance of abuse including alcohol, this proportion being more than twice as high as that found in medical and surgical patients (Davis 1984). Dual patients more frequently are male, suffer from personality disorders and have legal problems (Lehman et al. 1993). They also present more serious symptoms, increased utilization of treatment resources and are more likely to have a mood disorder (Ries et al. 1994) than patients with mental disorders without psychoactive substance use disorder. Dual patients, however, represent a heterogeneous population (Lehman et al. 1994 c); half of them have no independent mental disorder but suffer from psychiatric syndromes related to drug abuse; preferential drugs of abuse of the latter group are opiates, cocaine and hallucinogens (Lehman et al. 1994 a). In contrast, drug-abusing patients with independent axis-I mental disorders more likely use alcohol and cannabis, and their drug use problems are generally less severe (Lehmann et al. 1994 b, 1994 c). In Table 1 a survey is given of studies mostly performed on narrowly defined samples of severely ill psychotic patients and investigating prevalence of abuse with regard to particular substances of abuse.

The importance of drug abuse in axis-I mental disorders has abundantly been demonstrated in schizophrenia. Drugs may play a precipitating role in the development of the disorder (Andréasson et al. 1987, 1989), they can mimic or augment psychotic symptoms, precipitate relapse and affect outcome (Treffert 1978; Turner and Tsuang 1990; Swofford et al. 1996). Drug-abusing and drug-free schizophrenic patients differ in various ways: schizophrenic drug abusers experience symptoms earlier (Breakey et al. 1974) and seem to have better premorbid personality and psychosocial adjustment (Arndt et al. 1992; Breakey et al. 1974; Buckley et al. 1994). In some schizophrenic patients drugs lead to a transient symptom reduction (Dixon et al. 1990), and in others to more severe positive symptoms (Negrete et al. 1986). Drug-abusing psychotic patients have a higher readmission rate (Gupta

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Table 1 Prevalence of abuse (%) by particular substance of abuse in different samples of psychiatric patients.

Authors	Substance abuse definition	Population/mental disorder	n	Alcohol	Cocaine	Amphetamine	Sedatives/Hypnotics	Cannabis	Hallucinogens	Opiates
Mueser et al. 1992	Lifetime history of abuse/dependence	Schizophrenic disorder	85	45	29	14	7	22	8	9
		Schizoaffective disorder	74	42	17	10	8	8	15	15
		Major depression	47	47	36	20	11	11	2	11
		Bipolar disorder	41	66	29	21	20	22	10	10
Estroff et al. 1985	Lifetime drug abuse	Bipolar disorder	36	67	39	39	31 ^b	64	31	25
Dixon et al. 1991	DSM-III-R diagnosis drug abuse/dependence	Schizophrenic/schizoaffective disorder	83	25	17	6	4	31	6	0
Mueser et al. 1990	Lifetime substance abuse	Schizophrenic/schizoaffective/schizophreniform disorder	149	47		25 ^a	7	42	18	4
Barbee et al. 1989	Lifetime substance abuse/dependence	Schizophrenic disorder	53	47	4	11	9 ^b	36	6	8
Siris et al. 1988	History of RDC substance abuse	Schizophrenic/schizoaffective disorder with postpsychotic depression	46		13	13	4	35	11	2
Barry et al. 1995	Lifetime drug problems	Chronically mentally ill	253	39	2	3	2 ^b	16	0	2
Lehman et al. 1993	Current DSM-III-R psychoactive substance-use disorder	Consecutively admitted psychiatric inpatients	274	43	23	< 1	1	14	4	12
Lehmann et al. 1994a			435	39	17	< 1	1	11	3	8
Soyka et al. 1993	3-month prevalence of drug abuse	Consecutively admitted schizophrenic inpatients	447	71	20	14	22 ^b	43	26	16
Brady et al. 1991	Current or past substance abuse	Consecutively admitted psychiatric inpatients	100	68		17 ^a	4	7	3	1
Miller et al. 1989	DSM-III-R drug abuse	Consecutively admitted schizophrenic males	50	24	16	4	4	26	2	0
		bipolar patients	60	18	10	3	3	8	0	5

^a Stimulants including cocaine^b Benzodiazepines only

et al. 1996), show relative neuroleptic refractoriness (Bowers et al. 1990), higher rate of therapy complications (Dixon et al. 1992) and atypical course of illness characterized by the change from the predominance of negative to a predominance of positive symptoms (Rosenthal et al. 1994). They were reported to be at an increased risk of behaving violently (Smith and Hucker 1994) and of attempting suicide (Soyka et al. 1993). The comorbidity of schizophrenia and substance-use disorder is claimed to be best explained by the vulnerability model: drugs lead to psychotic breakdown in susceptible population (Newman and Miller 1992). Accordingly, many schizophrenic dual patients started their drug abuse before the onset of schizophrenia (Silver and Abboud 1994), even though this has not been confirmed in other studies (Soyka et al. 1993; Hekimian and Gershon 1968).

It is not only mentally ill people who abuse drugs frequently; reversely, high prevalence rates of psychiatric disorders have been found among patients with substance-abuse problems (Group for the Advancement of Psychiatry 1991). For example, among 350 drug-dependent inpatients 37% met the criteria for axis-I psychiatric disorders other than substance abuse (Mirin et al. 1991). Axis-I disorders most frequently found in drug-dependent patients are affective disorders, anxiety disorders and antisocial personality disorder (Mirin et al. 1991; Kokkevi and Stefanis 1995; Brady and Sonne 1995; Walker et al. 1994; Ross et al. 1988).

The present study investigated frequency of psychotropic substance use in a sample of patients from a geographically defined catchment area who were consecutively referred and admitted for inpatient treatment. Urine analyses were included to test the reliability of the patients' interview reports. The study also aimed at comparing individual diagnostic subgroups with each other with regard to the rates of substance use.

Methods

The study was performed during a 4-month period (June to October 1994) at the Psychiatric University Hospital Zurich. The hospital provides full inpatient care for all inhabitants of the catchment area. Basically, no patient who needs psychiatric hospitalization can be refused and patients of all diagnostic categories are admitted. All consecutive admissions younger than 65 years of age were included in the study. All patients were given a short semi-structured interview; the answers of the patients were noted on a self-prepared questionnaire. The individual items of the questionnaire were derived from the German version of the European Addiction Severity Index (Gsellhofer et al. 1993) and from the Westminster Substance Use Questionnaire (Adelekan et al. 1994). The questions concerned sociodemographic and some clinical data as well as data on substance use. The vast majority of the interviews were carried out by one of the authors (C.N.) during the first 2 days of the patients' hospitalization after an informed consent had been obtained. In a small proportion of the patients the clinical condition did not allow interviews at such an early point of time. These patients were approached later during their hospital stay.

Additional sociodemographic and clinical data including diagnoses were obtained from the clinical admission and discharge files.

Sociodemographic data studied included gender, age, marital status, family status, nationality, place of residence, school education, professional apprenticeship, different forms of living situation before index admission, financial resources before index admission, debts, criminal and aggressive behavior in the last week preceding index admission, punishments because of violations of drug law, violations of other laws and driving while intoxicated. Clinical data included certification of the patient, duration of index hospitalization, regular/irregular discharge, different modalities of living situation after discharge, status as smoker/non-smoker, intravenous use of drugs in the past and ICD-10 diagnoses. Regarding substance use, as precise information as was possible was collected including the kind of substances and the frequency of their use in the last 3 months preceding index admission. Five categories of substance-use frequency were built (never, less than once a week, once to twice a week, three and more times a week and daily use); for the purpose of the statistical evaluation, however, only three categories were considered including (a) no use (never taken substances in the study period), (b) sporadic use (twice a week or less) and (c) regular use (three times a week or more). The corresponding groups of patients are called (a) substance non-users, (b) sporadic substance users and (c) regular substance users. Separately, the frequency of substance use in the last 2 days preceding admission was also asked in the interviews.

In order to verify the interview reports of the patients with regard to their very recent substance use, urine tests were performed within 48 h after admission, on the condition that the patients agreed with the urine drug screen. The urine screens included the following substances: benzodiazepines, barbiturates, cannabis, hallucinogens, amphetamine derivatives, methadone, other opiates (including heroin) and cocaine.

The results were evaluated using non-parametric χ^2 test for categorical and Kruskal-Wallis test for continuous variables. To test the agreement between interview reports and urine screens kappa coefficients were calculated. Due to the higher number of comparisons performed, the Bonferroni correction for multiple comparisons was introduced in the tables.

Results

In the course of the 4-month study period a total 566 patients were consecutively admitted to the hospital. Of

them, 77 did not fulfil the age criterion. In 71 of the remaining 489 patients no interview was possible: 20 patients refused the interview, 5 patients did not understand German, 34 could not be interviewed because of their immediate discharge and in 12 the interview was not possible because of their longer-lasting thought disorder. Altogether 418 patients could be interviewed; however, 1 patient refused to answer the questions about his substance use so that 417 patients were included in the study. A few of them refused to answer some other questions which explains differing "n" in individual items. In 63 of the interviewed patients no urine screen could be performed, in the majority of them because of their refusal to give the urine specimen. On the other hand, 21 urine specimens (not considered further in this study) were available from the patients who could not be interviewed. In 354 patients a full set of data including report on drug use and urine screen was available.

The sample of 417 patients was composed of 240 men with an average age of 38 years (SD \pm 11 years) and of 177 women with an average age of 40 years (SD \pm 12 years). In Table 2 results of the interview reports on substance use in the last 3 months in these 417 consecutively admitted psychiatric patients are given, dividing the sample into three groups defined above: substance non-users, sporadic users and regular users. As can be seen, barbiturates, hallucinogens and amphetamine derivatives were only exceptionally used. Alcohol and benzodiazepines, but also cannabis, opiates including methadone and cocaine, were used frequently. One third of the patients used alcohol regularly, one fourth illegal drugs and one fifth "hard" illegal drugs (and methadone).

In Table 3 the three groups of non-users, sporadic users and regular users of illegal drugs (defined by their drug use in the last 3 months preceding admission) are compared with regard to some demographic, social and clinical variables. Only significant differences are indicated. Compared with the non-users the regular users of illegal

Table 2 Interview reports on substance use (3-month prevalence) in 417 consecutively admitted psychiatric inpatients. Presented are numbers of patients who did not use (non-users), rarely used (sporadic users) and frequently used (regular users) individual substances indicated on the left. Percentages are given in parentheses.

	Total (n)	Substance non-users (never)	Sporadic substance users (\leq 2 times/week)	Regular substance users (\geq 3 times/week)
1. Alcohol	417 (100)	115 (28)	169 (41)	133 (32)
2. Benzodiazepines	414 (100)	228 (55)	65 (16)	121 (29)
3. Barbiturates	415 (100)	406 (98)	3 (< 1)	6 (1)
4. Cannabis	417 (100)	318 (76)	47 (11)	52 (12)
5. Hallucinogens	417 (100)	413 (99)	4 (1)	0 (0)
6. Amphetamine derivatives including ecstasy	417 (100)	410 (98)	6 (1)	1 (< 1)
7. Methadone	417 (100)	351 (84)	5 (1)	61 (15)
8. Heroin	417 (100)	335 (80)	20 (5)	62 (15)
9. Other opiates	417 (100)	403 (97)	9 (2)	5 (1)
10. Cocaine	417 (100)	338 (81)	29 (7)	50 (12)
"Hard drugs" (7-10)	417 (100)	316 (76)	21 (5)	80 (19)
Illegal drugs including methadone (4-10)	417 (100)	276 (66)	37 (9)	104 (25)
Polysubstance use (\geq 2 substances/day)	416 (100)	251 (60)	54 (13)	111 (27)

Table 3 Comparison of non-users, sporadic users and regular users of illegal drugs (including methadone) with regard to some demographic, social and clinical variables. Percentages are given in parentheses.

	Illegal-drug non-users $n_1 = 276$ (100)	Illegal-drug sporadic users $n_2 = 37$ (100)	Illegal-drug regular users $n_3 = 104$ (100)	Significance ($df = 2$)	
				χ^2	p
Gender: men	145 (53)	26 (70)	69 (66)	8.58	0.014
Age (years): mean \pm SD	43 \pm 11	32 \pm 8	30 \pm 7	114.02	< 0.0001 ^d
Marital status: single	127 (46)	28 (76)	87 (84)	49.13	< 0.0001 ^d
Non-Swiss nationality	56 (20)	7 (19)	7 (7)	10.07	0.006
Basic education only	63 (23)	9 (24)	47 (45)	18.71	< 0.0001 ^d
Gainfully occupied	135 (49)	19 (51)	20 (19)	28.92	< 0.0001 ^d
On welfare	39 (14)	10 (27)	48 (46)	43.72	< 0.0001 ^d
Disability pension	111 (40)	10 (27)	22 (21)	13.13	0.0014
Illegal revenues/prostitution	0 (0)	2 (5)	21 (20)	59.10	< 0.0001 ^d
Debts (> 1 000 SFr) ^a	52 (19)	17 (46)	53 (51)	43.60	< 0.0001 ^d
Criminal behaviour in the last week	8 (3)	4 (11)	60 (58)	159.01	< 0.0001 ^d
Punishments because of drug law violations	7 (3)	10 (27)	66 (63)	177.17	< 0.0001 ^d
Punishments because of other law violations	53 (19)	16 (43)	54 (52)	42.58	< 0.0001 ^d
Smoker	186 (67)	32 (86)	102 (98)	42.01	< 0.0001 ^d
(Past) intravenous use of drugs	8 (3)	12 (32)	60 (58)	150.87	< 0.0001 ^d
Duration of index hospitalization (days): mean \pm SD	30 \pm 31	26 \pm 33	19 \pm 18	8.47	0.014
Irregular discharge ^b	7 (3)	0 (0)	9 (9)	8.27	0.016
ICD-10 diagnoses ^c					
F10 Alcohol-use disorders	80 (29)	3 (8)	6 (6)	23.64	< 0.0001 ^d
F1 Other substance-use disorders	8 (3)	14 (38)	86 (83)	253.62	< 0.0001 ^d
F2 Schizophrenic disorders	102 (37)	18 (49)	24 (23)	10.01	0.007
F3 Affective disorders	67 (24)	4 (11)	15 (14)	6.87	0.032
F4 Neurotic/stress/somatoform disorders	42 (15)	4 (11)	5 (5)	7.70	0.021
Others	50 (18)	6 (16)	16 (15)		n.s.

^a $n_1 = 275$, $n_3 = 103$ for this variable^b $n_1 = 242$, $n_2 = 34$, $n_3 = 99$ for this variable^c Each patient could be given more than one diagnosis^d Remains significant using Bonferroni correction for multiple comparisons ($p < 0.0013$)

drugs were more frequently young, single men of Swiss nationality. They were less well educated, had less frequently paid jobs and received less frequently a disability pension. On the other hand, they lived more frequently from welfare or from illegal revenues, had debts and were much more frequently criminal because of violations of drug and other laws. They stayed in the hospital for a shorter time and were more frequently irregularly discharged. They were more frequently diagnosed as substance-use disorders (other than alcohol) and received less frequently the diagnosis of alcoholism and schizophrenic, affective and neurotic/stress/somatoform disorders. Sporadic users of illegal drugs stand in many respects between these two groups; their demographic characteristics were more similar to those of regular users. On the other hand, in some social variables and in terms of diagnostic distribution they more resembled the group of non-users.

In 354 patients drug urine tests could be carried out and compared with the interview data. In 163 (46%) no substances were found; in contrast, in 89 (25%) more than one substance was identified. As indicated in Table 4 benzodiazepines were identified in 142 (40%) of 354 urine specimens, followed by opiates (68 = 19%), cocaine (51 =

15%), methadone (43 = 12%) and cannabis (36 = 10%). Whereas in 56% of benzodiazepine-positive urine specimens no other substances were found, illegal drugs and methadone – detected altogether in 27% of the specimens – were rarely found alone. Opiates alone were found in only 6 of 68 opiate-positive specimens, cocaine in 2 of 51 cocaine-positive specimens and methadone in 1 of 43 methadone-positive specimens. Cannabis alone was identified in 10 of 36 cannabis-positive specimens. No patient indicated the use of amphetamine derivatives or hallucinogens (LSD) in the interview; accordingly, these substances were never found in urine tests. Furthermore, in Table 4 the degree of agreement between the interview reports (regarding substance use in the last 2 days before admission) and the urine exam results is indicated by kappa coefficients. Excellent agreement was found for opiates, methadone and cocaine, and fair to relatively good agreement in the case of benzodiazepines, barbiturates and cannabis.

Finally, Table 5 compares interview reports on the sporadic and regular substance use (prevalence in the last 3 months preceding index admission) in the six main diagnostic categories. Regarding sporadic substance use, alcoholics used less frequently and patients with other sub-

Table 4 Substance use in the last 2 days before admission. Comparison of the interview data with the results of urine exams ($n = 354$). Percentages are given in parentheses.

		Substance use in the last 2 days before admission (interview reports):											
		Benzodiazepines		Barbiturates		Cannabis		Methadone		Opiates		Cocaine	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Substance use (positive urine exams)	Yes	81 (23)	61 (17)	6 (2)	15 (4)	21 (6)	15 (4)	37 (10)	6 (2)	61 (17)	7 (2)	42 (12)	9 (3)
	No	39 (11)	172 (49)	0 (0)	333 (94)	17 (5)	301 (85)	9 (3)	301 (85)	4 (1)	282 (80)	8 (2)	295 (83)
Kappa		0.40		0.43		0.52		0.81		0.90		0.80	

Table 5 Interview reports on sporadic and regular substance use (3-month prevalence) in the main diagnostic categories. Each patient could be given more than one diagnosis. Percentages are given in parentheses.

	F10 Alcohol-use disorders	F1 (without F10) Other substance- use disorders	F2 Schizophrenic disorders	F3 Affective disorders	F4 Neurotic, stress and somatoform disorders	Other disorders	Significance ($df = 5$)	
<i>n</i>	89 (100)	108 (100)	144 (100)	86 (100)	51 (100)	72 (100)	χ^2	<i>p</i>
<i>Sporadic substance use (≤ 2 times/week)</i>								
Alcohol	25 (28)	39 (36)	69 (48)	36 (42)	22 (43)	26 (36)	10.47	0.063
Benzodiazepines	15 (17)	22 (20)	15 (10)	18 (21)	4 (8)	11 (15)		n.s.
Cannabis	2 (2)	30 (28)	17 (12)	4 (5)	3 (6)	7 (10)	41.53	< 0.0001 ^a
"Hard" drugs (opiates, cocaine)	1 (1)	14 (13)	8 (6)	4 (5)	2 (4)	4 (6)	13.78	0.017
Illegal drugs including methadone	3 (3)	14 (13)	18 (12)	4 (5)	4 (8)	6 (8)	9.86	0.079
Polysubstance use (≤ 2 substances/day)	12 (13)	15 (14)	20 (14)	14 (16)	7 (14)	7 (10)		n.s.
<i>Regular substance use (≤ 3 times/week)</i>								
Alcohol	56 (63)	40 (37)	27 (19)	19 (22)	10 (20)	27 (37)	59.86	< 0.0001 ^a
Benzodiazepines	22 (25)	50 (46)	23 (16)	30 (35)	22 (43)	23 (32)	32.86	< 0.0001 ^a
Cannabis	4 (4)	37 (34)	17 (12)	8 (9)	1 (2)	10 (14)	51.79	< 0.0001 ^a
"Hard" drugs (opiates, cocaine)	2 (2)	76 (65)	12 (8)	8 (9)	5 (10)	10 (14)	207.87	< 0.0001 ^a
Illegal drugs including methadone	6 (7)	86 (80)	24 (17)	15 (17)	5 (10)	16 (22)	187.72	< 0.0001 ^a
Polysubstance use (≥ 2 substances/day)	20 (22)	80 (74)	17 (12)	16 (19)	8 (16)	18 (25)	138.80	< 0.0001 ^a

^aRemains significant using Bonferroni correction for multiple comparisons ($p < 0.0014$)

stance-use disorders more frequently cannabis and "hard" drugs; besides, no really important differences exist between the diagnostic subgroups. More highly significant differences were found with regard to regular substance use. As could be expected, a higher proportion of alcoholics regularly used alcohol and a higher proportion of patients in the category of other substance-use disorders regularly used other substances of all kinds. Repeating the comparisons under exclusion of the latter diagnostic subgroup the proportion of regular benzodiazepine users was significantly smaller in the subgroup of schizophrenic disorders and significantly fewer patients with alcohol-use disorder regularly used "hard" and illegal drugs. There were no significant differences between schizophrenic, affective, neurotic/stress/somatoform and other disorders with regard to the use of "hard" drugs and illegal drugs.

Discussion

We investigated substance use in a consecutive series of psychiatric patients referred for hospitalization. The vast majority of the admitted patients participated in the study interviews; the proportion of really refusing subjects amounted to only 4%. We confined our exploration strictly to the frequency of the substance use; thus, we avoided the problem of the definition of substance use, abuse and dependence. Also, we did not inquire about the amount of the drugs taken, as we did not expect to receive reliable data in this regard. We studied 3-month prevalence of substance use; thus, our data are basically cross sectional. However, the proportion of drug abusers among mentally ill patients does not seem to change during a medium-term follow-up (Bartels et al. 1995), even though fluctuations in the rate of abuse of individual substances are being observed (Baberg et al. 1996) depending on the drugs' availability (el-Guebaly 1975).

The 3-month prevalence of the regular alcohol use in our study was found to be 32%, a proportion which seems to be lower than in the majority of studies indicated in Table 1; however, most of those studies investigated lifetime prevalence and we applied a narrow definition of regular substance use. Almost the same proportion of our patients (29%) regularly used benzodiazepines. The regular benzodiazepine use was especially high in the subgroup of neurotic/stress/somatoform disorders, where it was almost as high as in the subgroup of substance-use disorders other than alcohol (43 vs 46%). Of course, in some patients benzodiazepines (especially when found in urine alone) will have been used therapeutically; in others they probably were abused – benzodiazepines were hardly medically prescribed to more than half of all patients with substance-use disorders. Barbiturates, amphetamine derivatives including ecstasy and hallucinogens were only exceptionally reported and seem to play practically no role in our inpatient population at present. In contrast, one third of our patients used cannabis, half of them regularly. This contradicts the observation that abuse of stimulants, hallucinogens and cannabis are related to each other (Mueser et al. 1990). Corresponding frequencies of cannabis use/abuse were found in other studies mostly investigating patients of specific diagnostic samples (compare Table 1). Excluding the subgroup of substance-use disorders other than alcohol, there were no significant differences between our diagnostic categories including schizophrenic disorders and alcoholism with regard to cannabis use.

Altogether, 15% of our patients used regularly, and an additional 5% sporadically, heroin; 12% of all our patients used regularly, and another 7% sporadically, cocaine. Whereas the use of cocaine in our population seems to correspond to that reported in other studies, the proportion of our patients using opiates belongs to the highest reported in the literature. This high proportion may be due to the presence of patients with substance-use disorders in our study sample, encompassing all consecutive psychiatric hospital admissions. Incidentally, excluding substance-use disorders, there were no significant differences between the remaining diagnostic subgroups with regard to the use of “hard” or illegal drugs. Specific drugs of choice have been shown to differ by diagnosis: psychotic (Tsuang 1982) and especially schizophrenic patients’ (Schneier and Siris 1987) use of amphetamine, cocaine and hallucinogens was said to be greater (or equal), and their use of alcohol, opiates and sedative hypnotics less (or equal) than use by control groups consisting of other psychiatric patients or normal subjects (Mueser et al. 1990). We were not able to confirm these findings of more or less preferential use of stimulants, cocaine or other substances we studied by schizophrenic in comparison with other patients, specifically with patients suffering from affective disorders and neurotic/stress/somatoform disorders.

In only a minority of other studies were urine drug tests included. Self-reports identified more opiate and cocaine use than random urine screens (Zanis et al. 1994), false-negative screens having been found in almost half of

the patients acknowledging drug use (Appleby et al. 1995). On the other hand, half of the schizophrenic patients and 45% of psychotic patients, respectively, with positive urine drug screens denied drug use in self-reports (Shaner et al. 1993; Brady et al. 1991). Positive drug screens were found in 39% of patients at the psychiatric emergency room and in 35% of patients of the psychiatric intensive treatment unit (Sanguinetti and Samuel 1993). The proportion of positive urine tests (at least one substance) in our study was 54%. Generally, the interview reports by our patients were confirmed by the results of urine specimens. An only fair to relatively good agreement was found in the case of benzodiazepines, barbiturates and cannabis. This result, however, does not necessarily indicate incorrectness of the patients’ interview data. All these substances can be – partially due to their longer half-times, partially due to their kind of body distribution – excreted in the urine for days after the last substance intake. We compared the findings of the urine exams with the reports of substance intake in the last 2 days. Some patients may have used substances earlier and were still excreting them in urine. Regarding methadone, opiates and cocaine, excellent agreement was found. This finding underlines the correctness of the patients’ reports and indicates indirectly the high validity of our results with regard to the prevalence of substance use in our population, all the more because only 15% of the interviewed patients refused urine exams.

As could be expected, the three patient groups, namely the non-users, the sporadic users and the regular users of illegal drugs, differed significantly from each other in many social, demographic and clinical aspects. The most pronounced differences were, of course, found between the non-users and the regular users, the latter group being different not only in the demographic characteristics, but equally so in their psychosocial adjustment including financial revenues and criminal behaviour. Clearly, the more frequent the (illegal) substance use, the less successful and independent is the overall psychosocial adjustment. A total of 23% of illegal-drug (including methadone) regular users received the diagnosis of schizophrenic disorder; a subgroup of these patients used “hard” drugs. Whereas schizophrenic patients using cannabis have been extensively studied, this has unfortunately not been the case regarding the existing group of schizophrenic users of “hard” drugs.

Our results confirm that substance use represents a very frequent event in the population of patients referred for psychiatric admission at present. Altogether, almost every fifth of our patients regularly used “hard” drugs (opiates and/or cocaine), every fourth illegal drugs and every third alcohol, which thus remains the “substance number one”. In the majority of our patients polysubstance use was identified and this finding was substantiated by the results of urine exams: e.g. cocaine alone was found in only 2 of 51 cocaine-positive and methadone in only 1 of 43 methadone-positive urine specimens. Basically, in patients of all diagnostic subgroups some substance use was identified, although to different extents:

e.g. the proportion of illegal-drug users was 55% among substance-use disorders, 29% among schizophrenic disorders, 22% among affective disorders and 18% among neurotic/stress/somatoform disorders. As mentioned previously, in the literature considerable attention has been paid to the substance use of schizophrenic patients. In contrast, patients of other diagnostic categories, such as affective disorders, have only exceptionally been studied in this respect (Estroff et al. 1985; Miller et al. 1989; Mueser et al. 1992; Kales et al. 1995). Our results indicate that this neglect is not justified because – except for substance-use disorders – the use of different substances is not significantly more frequent in the category of schizophrenic than in other disorders (including affective disorders).

The clinical implications of our and other studies' findings are clear: individuals with mental disorders are almost three times more likely to have some addictive disorder than individuals without mental disorders (Regier et al. 1990) and substance use is frequent in patients seeking psychiatric treatment (Sheehan 1993). As quoted in the introduction, it can influence the occurrence, form, course and outcome of mental disorders of different kinds. Therefore, in mental patients of all diagnostic categories the question of substance use has to be explored and the findings have to be properly evaluated and taken into consideration in the diagnostic as well as in the therapeutic process.

References

- Adekan ML, Gowers S, Singh D (1994) Reliability and validity of the Westminster Substance Use Questionnaire among Lancashire adolescents. *Drug Alcohol Depend* 34: 191–199
- Andréasson S, Engström A, Allebeck P, Rydberg U (1987) Cannabis and schizophrenia. A longitudinal study of Swedish conscripts. *Lancet* ii: 1483–1486
- Andréasson S, Allebeck P, Rydberg U (1989) Schizophrenia in users and nonusers of cannabis. A longitudinal study in Stockholm County. *Acta Psychiatr Scand* 79: 505–510
- Appleby L, Luchins DJ, Dyson V (1995) Effects of mandatory drug screens on substance use diagnoses in a mental hospital population. *J Nerv Ment Dis* 183: 183–184
- Arndt S, Tyrrell G, Flaum M, Andreasen NC (1992) Comorbidity of substance abuse and schizophrenia: the role of pre-morbid adjustment. *Psychol Med* 22: 379–388
- Baberg HT, Nelesen RA, Dimsdale JE (1996) Amphetamine use: return of an old scourge in a consultation psychiatry setting. *Am J Psychiatry* 153: 789–793
- Barbee JG, Clark PD, Crapanzano MS, Heintz GC, Kehoe CE (1989) Alcohol substance abuse among schizophrenic patients presenting to an emergency psychiatric service. *J Nerv Ment Dis* 177: 400–407
- Barry KL, Fleming MF, Greenley PW, Kropp S, McKee D (1995) Assessment of alcohol and other drug disorders in the seriously mentally ill. *Schizophr Bull* 21: 313–321
- Bartels SJ, Drake RD, Wallch MA (1995) Long-term course of substance use disorders among patients with severe mental illness. *Psychiatr Serv* 46: 248–251
- Bowers MB, Mazure CM, Nelson JC, Jatlow PI (1990) Psychotogenic drug use and neuroleptic response. *Schizophr Bull* 16: 81–85
- Brady KT, Sonne SC (1995) The relationship between substance abuse and bipolar disorder. *J Clin Psychiatry* 56: 19–24
- Brady K, Casto S, Lydiard RB, Malcolm R, Arana G (1991) Substance abuse in an inpatient psychiatric sample. *Am J Drug Alcohol Abuse* 17: 389–397
- Breakey WR, Goodell H, Lorenz PC, McHugh PR (1974) Hallucinogenic drugs as precipitants of schizophrenia. *Psychol Med* 4: 255–261
- Buckley P, Thompson P, Way L, Meltzer HY (1994) Substance abuse among patients with treatment-resistant schizophrenia: characteristics and implications for clozapine therapy. *Am J Psychiatry* 151: 385–389
- Davis DI (1984) Differences in the use of substances of abuse by psychiatric patients compared with medical and surgical patients. *J Nerv Ment Dis* 172: 654–657
- Dixon L, Haas G, Weiden PJ, Sweeney J, Frances AJ (1990) Acute effects of drug abuse in schizophrenic patients: clinical observations and patients' self-reports. *Schizophr Bull* 16: 69–79
- Dixon L, Haas G, Weiden PJ, Sweeney J, Frances AJ (1991) Drug abuse in schizophrenic patients: clinical correlates and reasons for use. *Am J Psychiatry* 148: 224–230
- Dixon L, Weiden PJ, Haas G, Sweeney J, Frances AJ (1992) Increased tardive dyskinesia in alcohol-abusing schizophrenic patients. *Compr Psychiatry* 33: 121–122
- el-Guebaly N (1975) Manic-depressive psychosis and drug abuse. *Can Psychiatr Assoc J* 20: 595–598
- Estroff TW, Dackis CA, Gold MS, Pottash ALC (1985) Drug abuse and bipolar disorders. *Int J Psychiatry Med* 15: 37–40
- Group for the Advancement of Psychiatry, Committee on Alcoholism and the Addictions (1991) Substance abuse disorders: a psychiatric priority. *Am J Psychiatry* 148: 1291–1300
- Gsellhofer B, Fahrner E-M, Platt J (1993) Deutsche Version von European Addiction Severity Index, EuropASI Fassung. Nach dem amerikanischen Original von McLellan T, 5th edn, 1992, und der europäischen Version EuropASI von Kokkevi A, Hartgers C, Blanken P, Fahrner E-M, Pozzi G, Tempesta E, Uchtenhagen A. IFT Institut für Therapieforchung, München
- Gupta S, Hendricks S, Kenkel AM, Bhatia SC, Haffke EA (1996) Relapse in schizophrenia: Is there a relationship to substance abuse? *Schizophr Res* 20: 153–156
- Hekimian LJ, Gershon S (1968) Characteristics of drug abusers admitted to a psychiatric hospital. *JAMA* 205: 125–130
- Kales JP, Barone MA, Bixler EO, Miljkovic MM, Kales JD (1995) Mental illness and substance use among sheltered homeless persons in lower-density population areas. *Psychiatr Serv* 46: 592–595
- Kokkevi A, Stefanis C (1995) Drug abuse and psychiatric comorbidity. *Compr Psychiatry* 36: 329–337
- Lehman AF, Myers CP, Thompson JW, Corty E (1993) Implications of mental and substance use disorders. A comparison of single and dual diagnosis patients. *J Nerv Ment Dis* 181: 365–370
- Lehman AF, Myers CP, Corty E, Thompson JW (1994a) Prevalence and patterns of "dual diagnosis" among psychiatric inpatients. *Compr Psychiatry* 35: 106–112
- Lehman AF, Myers CP, Corty E, Thompson J (1994b) Severity of substance use disorders among psychiatric inpatients. *J Nerv Ment Dis* 182: 164–167
- Lehman AF, Myers CP, Dixon LB, Johnson JL (1994c) Defining subgroups of dual diagnosis patients for service planning. *Hosp Community Psychiatry* 45: 556–561
- Miller FT, Busch F, Hertz Tanenbaum J (1989) Drug abuse in schizophrenia and bipolar disorder. *Am J Alcohol Abuse* 15: 291–295
- Mirin SM, Weiss RD, Griffin ML, Michael JL (1991) Psychopathology in drug abusers and their families. *Compr Psychiatry* 32: 36–51
- Mueser KT, Yarnold PR, Levinson DF, Singh H, Bellack AS, Kee K, Morrison RL, Yadam KG (1990) Prevalence of substance abuse in schizophrenia: demographic and clinical correlates. *Schizophr Bull* 16: 31–56
- Mueser KT, Yarnold PR, Bellack AS (1992) Diagnostic and demographic correlates of substance abuse in schizophrenia and major affective disorder. *Acta Psychiatr Scand* 85: 48–55

- Negrete JC, Knapp WP, Douglas DE, Smith WB (1986) Cannabis affects the severity of schizophrenic symptoms: results of a clinical survey. *Psychol Med* 16:515-520
- Newman R, Miller N (1992) Substance abuse and psychosis. *Curr Opin Psychiatry* 5:25-28
- Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd JL, Goodwin FK (1990) Comorbidity of mental disorders with alcohol and other drug abuse. Results from the epidemiologic catchment area (ECA) study. *JAMA* 264:2511-2518
- Ries R, Mullen M, Cox G (1994) Symptom severity and utilization of treatment resources among dually diagnosed inpatients. *Hosp Community Psychiatry* 45:562-568
- Rosenthal RN, Hellerstein DJ, Miner CR (1994) Positive and negative syndrome typology in schizophrenic patients with psychoactive substance use disorders. *Compr Psychiatry* 35:91-98
- Ross HE, Glaser FB, Germanson T (1988) The prevalence of psychiatric disorders in patients with alcohol and other drug problems. *Arch Gen Psychiatry* 45:1023-1031
- Sanguineti VR, Samuel SE (1993) Reported prevalence of drug abuse comorbidity in a city-wide emergency room system. *Am J Drug Alcohol Abuse* 19:443-450
- Schneier FR, Siris SG (1987) A review of psychoactive substance use and abuse in schizophrenia. Patterns of drug choice. *J Nerv Ment Dis* 175:641-652
- Shaner A, Khalsa ME, Roberts L, Wilkins J, Anglin D, Hsieh S-C (1993) Unrecognized cocaine use among schizophrenic patients. *Am J Psychiatry* 150:578-762
- Sheehan MF (1993) Dual diagnosis. *Psychiatr Q* 64:107-134
- Silver H, Abboud E (1994) Drug abuse in schizophrenia: comparison of patients who began drug abuse before their first admission with those who began abusing drugs after their first admission. *Schizophr Res* 13:57-63
- Siris SG, Kane JM, Frechen K, Sellow AP, Mandeli J, Fasano-Dube B (1988) Histories of substance abuse in patients with postpsychotic depressions. *Compr Psychiatry* 29:550-557
- Smith J, Hucker S (1994) Schizophrenia and substance abuse. *Br J Psychiatry* 165:13-21
- Soyka M, Albus M, Kathmann N, Finelli A, Hofstetter S, Holzbach R, Immler B, Sand P (1993) Prevalence of alcohol and drug abuse in schizophrenic inpatients. *Eur Arch Psychiatry Clin Neurosci* 242:362-372
- Swofford CD, Kasckow JW, Scheller-Gilkey G, Inderbitzin LB (1996) Substance use: a powerful predictor of relapse in schizophrenia. *Schizophr Res* 20:145-151
- Treffert DA (1978) Marijuana use in schizophrenia: a clear hazard. *Am J Psychiatry* 135:1213-1215
- Tsuang MT, Simpson JC, Kronfol Z (1982) Subtypes of drug abuse with psychosis. Demographic characteristics, clinical features, and family history. *Arch Gen Psychiatry* 39:141-147
- Turner WM, Tsuang MT (1990) Impact of substance abuse on the course and outcome of schizophrenia. *Schizophr Bull* 16:87-95
- Walker RD, Howard MO, Lambert MD, Suchinsky R (1994) Psychiatric and medical comorbidities of veterans with substance use disorder. *Hosp Community Psychiatry* 45:232-237
- Zanis DA, McLellan AT, Randall M (1994) Can you trust patient self-reports of drug use during treatment? *Drug Alcohol Depend* 35:127-132